

Schedule Set For Ontario CIPC Conference

Site for the second annual conference of the Ontario Branch of the Canadian Institute on Pollution Control will be the Skyline Hotel, Toronto, April 15-16.

Among the highlights of the agenda will be analyses of various aspects of nutrient pollution control by specialists involved in development of

solutions to the problem. The second day's program will consider the problems of servicing resort areas. The agenda allows ample opportunity for discussion.

The conference committee, under the chairmanship of C. S. Dutton, stresses the necessity that all members participate in the annual general

meeting (Thursday afternoon, April 15) when the affairs and objectives of the branch will be discussed.

The programs provide for luncheons and a dinner on the Thursday evening.

Secretary-treasurer of the Ontario branch is G. T. C. Scott, P.O. Box #685, Station B, Willowdale, Ontario.

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Water management in Ontario

Watertalk

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Diversified Experience

Richard Sachse Appointed AGM

Richard K. D. Sachse, formerly of Ottawa, has been appointed assistant general manager, finance and administration, for the Ontario Water Resources Commission.

Mr. Sachse, 34, commenced his business career as a chartered accountant, developing financial systems for a Winnipeg manufacturing concern. During a subsequent four-year period he diversified, holding key positions in the sales, systems and training branches of the Winnipeg office of the Univac division of the Sperry-Rand Corporation.

GLASSCO CONSULTANT

For the past five years Mr. Sachse has worked for the Government of Canada in Ottawa—initially as a consultant on implementation of the financial aspects of the Glassco Commission report and latterly as director of finance of the Unemployment Insurance Commission.

His new position will involve, primarily, the co-ordin-

ation of financial and administrative aspects of OWRC operations, tailoring these to the Commission's long-range objectives.

POSITIVE STIMULUS

On announcing the appointment, OWRC general manager D. S. Caverly noted that Mr. Sachse's diversified experience should provide "a very positive stimulus" in the continuing development of OWRC's financial and administrative programs.



Richard Sachse

Preliminary Findings On Grand Basin Released By Commission

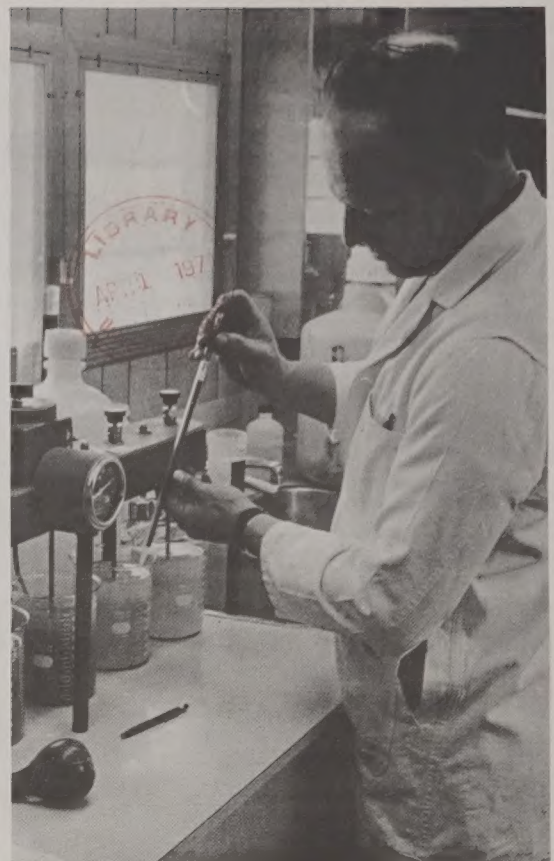
The preliminary findings of a study team which examined the Grand River and its tributaries for water quality and waste assimilation capacity were released by the Ontario Water Resources Commission late in January. Based on statistics collected over a five-year period, the findings are in advance of a major report scheduled for completion this year. The major report will establish water quality standards and effluent discharge limits and will consider the possibilities of augmenting water flows.

The studies provide, for the first time, comprehensive background water quality information necessary to establish waste discharge controls. (To ensure protection of the river, point discharges must

not exceed the river's ability to assimilate wastes without degrading its quality.)

From the findings it is obvious that for certain areas in the basin—e.g. below Guelph and Kitchener—some method must be developed to augment low summer flows and to remove more waste by improved treatment including nutrient removal. It was found that approximately 70% of the annual phosphate input to the basin is from municipal sources.

The final report, expected by May, will be used to establish water quality standards for the basin under the Ontario Water Resources Commission Act. Public hearings by the Commission will invite recommendations following publication of the report.



Phosphorus Installation

In continuing study at the Newmarket sewage treatment plant, OWRC technician Dave Woodside conducts tests to assess various factors related to treatment of wastes incorporating phosphorus removal process. One of the Commission's mobile laboratories has been

located at the plant for the study.

The Newmarket plant is the first in Ontario to be equipped with full scale facilities for phosphorus removal. Data gained from study of its operation will be of value in the planning of other installations. See story on page 4 for further details.

Special guest on a segment of the 'This Land' CBC television series, broadcast in February, was OWRC chairman D. J. Collins.

Shown, in photo, conversing with program mod-

erator John Hopkins, Mr. Collins discussed recent developments in the pollution control field, detailing programs that have been initiated to curb various problems.

Mr. Collins indicated that industries, as well as

the general public, have adopted a far more positive attitude towards pollution control in recent times.

The 13-minute sequence was filmed in Toronto's Wilket Park, located near Leslie and Eglinton Ave.

Pollution Discussed On 'This Land' Series



Ontario Paper Signs Agreement For Massive Program

The Ontario Paper Company Limited signed an agreement, late in December, with Copeland Process (Canada) Limited to install an evapora-

tion and burning system specially designed to remove dissolved solids causing most of the Company's contribution to the foam and discoloration

of the old Welland Canal.

Robert M. Schmon, President of Ontario Paper, said the Company will spend nearly \$7 million on the installa-

tion—about \$4 million for the system itself and the rest for building and ancillaries.

"Over the past 10 years", Mr. Schmon said, "we have investigated about 30 different processes. The Copeland system is the one most capable of coping with the unique properties of the wastes from our operations here. We made certain modifications, and after testing the system in a pilot plant, we are ready to go ahead".

ION EXCHANGE

He said this was the third, and most costly part, of the three-stage pollution control program costing \$9.4 million announced just over a year ago. A clarifier to remove suspended solids has been operating since the beginning of 1970. An ion exchange plant has just started up and will remove 40 tons a day of dissolved solids.

The Copeland process is designed to treat liquid waste remaining after spent sulphite liquor is used successfully to produce alcohol and vanillin as by-products. This residue contains organic material cooked out of the pulpwood,

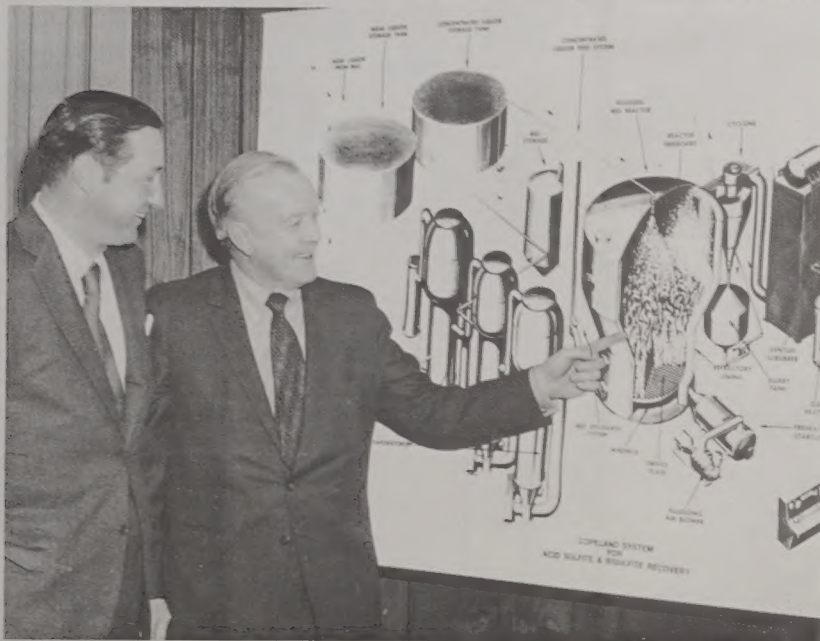
plus some inorganic chemicals. The Copeland system evaporates water from this residue, and the concentrated material is then burned.

ENABLES RECOVERY

The process will not only destroy pollutants, but will enable the Company to recover inorganic chemicals. In this case, the chemical is sodium sulphate, or salt cake, which is used in the manufacture of kraft pulp. Mr. Schmon said the company was fortunate to have been able to develop a method that not only copes with its special waste problem but also gives a saleable product.

"We expect the Copeland system to go on stream in 1972", he said, "so will still be faced with the color and foam problem until then. However, we have moved as quickly as technology and economics would permit".

Industrial wastes specialists of the Ontario Water Resources Commission have indicated that the facilities will result in substantial improvements to the water quality of the canal.



ENGINEERING DETAIL of treatment process is explained to company president, Robert M. Schmon, left, by George Copeland, president of firm installing the massive treatment system.

Colored Tissue: Producer Says It Isn't Harmful

A major Canadian producer of paper products says it has uncovered no evidence through its own extensive research or that of other companies and agencies to indicate that colored tissue contributes to pollution.

In a newsletter to its 5,000 Canadian employees, Kimberly-Clark of Canada Ltd. says its parent company in the U.S. (Kimberly-Clark Corp.) has conducted exhaustive tests of the dyes used in its own laboratories as well as sponsoring studies by independent research agencies and universities. In addition, the company has received reports on the subject from dye manufacturers, the Textile Dye Institute and the American Paper Institute.

As a result, says the newsletter, "Kimberly-Clark has no evidence whatever from its own research, and has received no report from the work of others, that indicates in any way that because a tissue is colored it creates or contributes to degradation of the environment".

WIDESPREAD WORRY

The newsletter says that "somewhere, somehow, someone started a rumor about colored tissues that has gained currency because of widespread public worry about the environment."

"Widely circulated checklists that tell individuals how

to protect the environment often have suggested that colored tissues pollute. But we believe this is a misconception with no foundation in fact."

The newsletter adds that the company has gone even further in its efforts.

"Since we first heard the suggestion that dyed tissues might affect the environment, we have tried to track down the source of this information to help determine its accuracy. We wrote dozens of letters, made countless phone calls, and held personal dis-

cussions with a large number of persons who represent both the media and the many groups dedicated to conservation and protection of the environment."

NO TECHNICAL EVIDENCE

"In each case, the information was traced to individuals who have acknowledged they were theorizing or that their reports were inconclusive or misinterpreted."

"In no case have we discovered any source that has evidence to indicate that colored tissue products represent

an environmental problem of any significance," the newsletter states.

The company notes that "we have no evidence to contradict the following beliefs."

- Dyes do not inhibit the decomposition or biodegradability of tissue products.

- The rate at which dyes themselves break down varies depending on the chemical structure of the dye and the type of material that has been dyed. Some appear to decompose faster than the wood fibre they colour, some

slower.

- Dyes used in tissue products generally show an affinity for the tissue itself or other types of solid or particulate matter, so that when the dye enters a sewage system it will tend to cling to solids in the system rather than pass off in solution.

- The dyes are not toxic, will not kill fish or plant life, and do not promote algae growth in rivers or lakes.

The newsletter adds that "the actual amount of dyes used in tissue products is relatively low and constitutes only a fraction of one percent of the solids normally entering a sewage system or stream."

FUNCTIONS UNALTERED

"In the case of bathroom tissue, the basic functions of a septic tank are not altered by the dye used to colour the tissue. In addition, most towels, napkins and facial tissues never enter a water system at all since they are disposed of as dry waste."

Kimberly-Clark estimates that "if all colored tissue were suddenly changed to white, the pollution problem would not be diminished one iota."

The company says it is concerned about the situation because it is one of the largest producers of colored tissues—as well as white.

Brochure Details Federal Role

A new brochure, entitled *Water, Salt and Fresh*, has been distributed by the federal Department of Energy, Mines and Resources, detailing the role of the department in the use of Canada's waterways and searoutes.

Of particular interest is a section dealing with the department's role in the detection and prevention of pollution. The section outlines the nature of the Canada Water Act, stressing that its success depends on effective federal-provin-

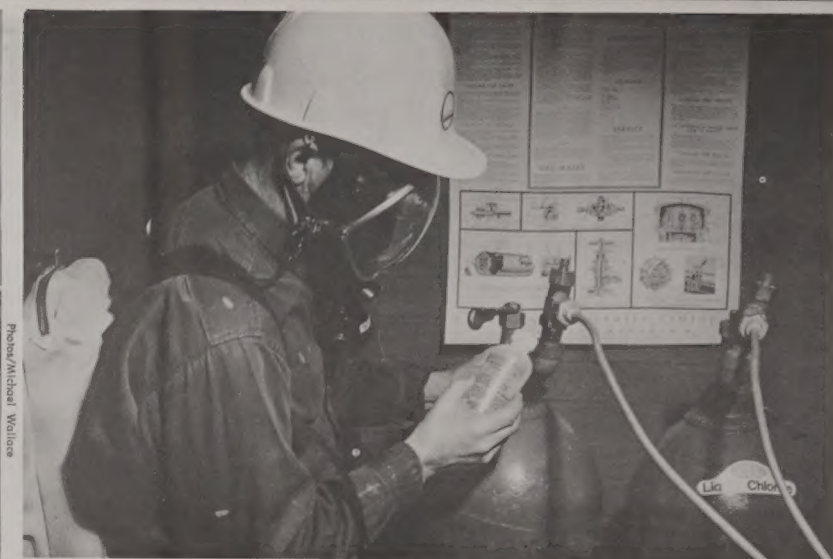
cial collaboration and the establishment, throughout Canada, of the appropriate inter-jurisdictional committees and agencies to curb pollution.

Also described is the function and purpose of the department's Canada Centre for Inland Waters, located at Burlington, Ontario. The publication notes that, ultimately, the centre will house 250 to 300 engineers and scientists as well as a support staff. It adds that studies are conducted at permanent and temporary laboratories of

the department across Canada.

In addition to detailing responsibilities of the department, the publication itemizes examples of successful federal-provincial cooperation in water management problems.

Still another section deals with the department's role in the International Hydrological Decade—a world-wide research effort, delving into the storage and movement of water in all its forms, commenced in 1965.



HOW NOT TO ACT when changing chlorine cylinders is illustrated, complete with belligerent expression, by Ray Norton, safety co-ordinator, in photo at left. In particular note detached cylinder safety chain and that our daring workman is preparing to wash tanks and tubing with water—a definite 'no-no'. Above photo shows battle garb worn to make repairs during a chlorine leak.

Ray Norton: OWRC's Safety Ombudsman

If you were to touch off an explosion in a digester at an OWRC-operated sewage treatment plant then, next to your mother, Ray Norton would probably be the person most upset.

As co-ordinator of OWRC's plant operations

safety program, Mr. Norton is responsible for monitoring safety practices of a staff of 350 plant operations personnel at Commission-operated sewage and water treatment plants throughout the province.

Sewage and water treat-

ment plants can be dangerous places. According to Mr. Norton, the two main boogies are digesters and chlorine storage tanks. Digesters are the large tanks in which solid wastes from sewage are accumulated. From the sewage waste in the digester, 2,000 cubic feet per day or more of highly explosive methane gas can be produced. Thus, make the wrong move when tinkering around with a digester and you and some expensive facilities will quite possibly be blown to kingdom come.

Chlorine, used as an anti-bacterial agent in water and sewage treatment plants, has a number of properties which make it particularly dangerous. Besides being deadly poisonous, it is two-and-one-half times the weight of air. This means that chlorine, accumulating from a leak, can not be easily dispersed via a conventional ventilation system. Also, Mr.



EFFECTS OF CORROSION caused by gases is dramatically illustrated. Top photo shows how chunk of valve from digester assembly was blown off when pressure tested. Right photo shows effects of chlorine on tubing.

Norton points out, water and chlorine don't mix—or rather they shouldn't be allowed to. When they do you get a highly corrosive acid which can eat through a cylinder tank like a mouse through a wall. You can smell chlorine gas. But, unfortunately, when you smell it it is very likely dangerous. Chlorine leaks sometimes occur when changing cylinders or if feed lines corrode or break.

Safety procedures to be adopted in potentially dangerous situations are explicitly outlined in a manual, developed and twice revised by Mr. Norton since he took up safety as a full-time career in 1964. The procedures are based on regulations established by the Ontario Department of Labour. Mr. Norton's manual is regarded as such a definitive work that it has served as the basis for similar manuals of water and sewage agencies in the United States and Europe. Another aspect of Mr. Norton's work involves conducting safety lectures at Commission sponsored workshops to which water and sewage plant operators from all municipalities are invited.

The safety program achieved official commenda-

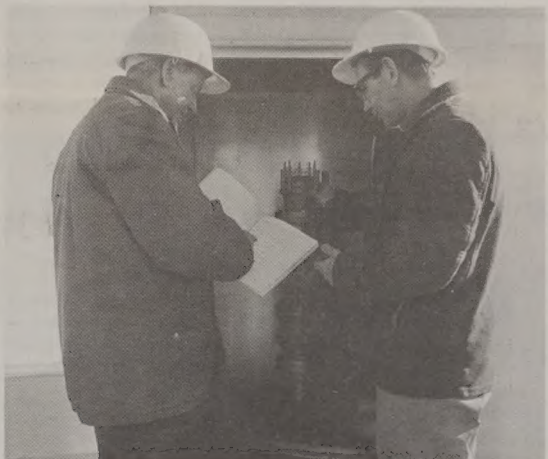


tion in 1968 when it won an award from the American Water Works Association.

Though Mr. Norton agrees that the program has generally been a success, he attributes much of the low accident factor to "plain dumb luck". He is worried, in fact, that this article may spark a series of disasters at the plants.

He is painfully aware, too, that his manual cannot provide absolute insurance that accidents will not occur. Generally, the hardest accidents to curb, he says, are the self-inflicted ones. One of his favorite examples concerns the staffer who stood up under a truck. "There is no way we can incorporate every possibility in the manual," he concludes.

However, Mr. Norton will keep trying and, by maintaining the most advanced safety procedures he can devise, will help "luck" along as much as possible.



Above: Mr. Norton discusses how regulation in his safety manual relates to pressure release valve with plant operator Ernie Heywood. Below: Hand held sensor 'sniffs' air close to sewage suspected of containing dangerous gases. Procedure is outlined in manual.





Watertalk

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The Trouble With Features

Since the North American newsmedia, in general, discovered pollution some three years ago there has been a constant stream of feature articles and television programs devoted to environmental problems.

Initially, much of this news provided a valuable service by communicating a host of information to the public and promoting environmental conservation. Lately, though, press and television features have tended to be of increasingly marginal value. Like the weekly situation comedy series that gradually strangles itself, pollution features are becoming increasingly redundant and repetitive.

FOOD FOR MASOCHISTS

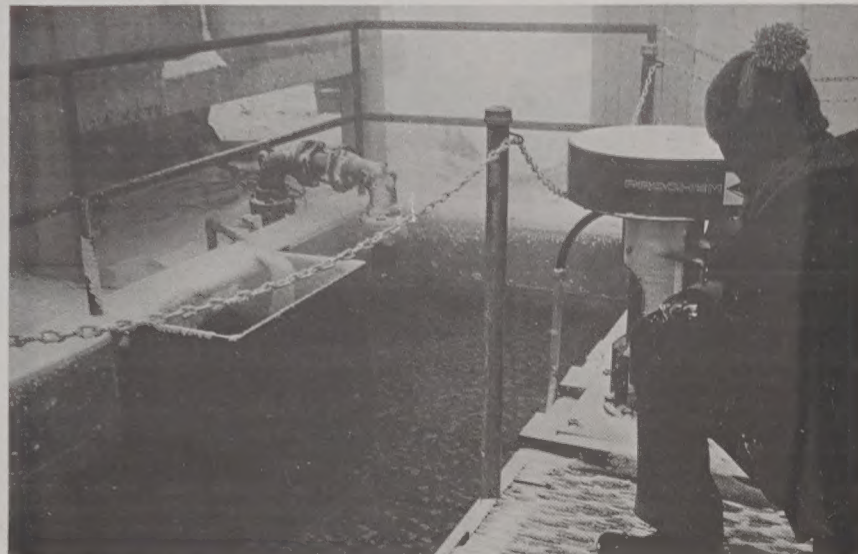
Part of what is wrong with many pollution features is that they seem to be inspired by a third-rate horror plot. Possibility of doomsday is stressed to the limits. Effectivity of control measures underway or in preparation is rarely assessed.

While no doubt this negativistic approach does some good besides satisfying masochistic viewers and readers, it is failing to fulfill the requirements of a great number of people who are now reasonably well informed.

'POLLUTION' BECOMING 'BORING'

The danger, in fact, exists that by producing features that constantly have little to say, the media may make the word "pollution" synonymous with "boring."

What is now needed is comprehensive reporting which critically and objectively examines all areas—the problems, programs developed to correct adverse situations, and weaknesses in legislation and counter-measures that still remain throughout North America. Dwelling on 'the horror of it all' is no longer enough.



LIME, RAW SEWAGE (and snow) are thoroughly mixed in flash mix tank (above). After mixing period is completed the sewage is discharged to the conventional treatment process. Lime is stored in a tank, shown in photo at right.

Newmarket Gets First Nutrient Facilities

'Group of Seven' is the name loosely adopted by the OWRC engineers, technicians and research personnel who have been directly involved in the development of Ontario's first full-scale nutrient removal facilities at the Newmarket-East Gwillimbury water pollution control plant.

The new permanent facilities were designed by the Commission's division of construction and were based on a technique developed and refined by Com-

mission research personnel. The technique, utilizing a lime process, was successfully tested in experiments at the Richmond Hill treatment plant during 1969. Reductions of over 92 per cent of the phosphorus content of sewage were achieved as well as a significant amount of nitrogen. Construction of the Newmarket work commenced last fall and was just recently completed.

Basically, the lime treatment apparatus at Newmarket is

straightforward. Lime, in slurry form, is stored in a 25-ft diameter tank. The slurry is constantly recirculated to ensure that the lime remains in suspension.

The lime slurry meets the raw sewage (drawn off from a grit removal tank) in a rapid mix tank. The amount of lime slurry in the mixture is carefully regulated by two metering pumps located in a 'bunker house' between the storage and mix tanks. The lime and sewage are thoroughly mixed for about

five minutes before being discharged to the primary clarifier of the normal treatment process where most of the phosphorus is precipitated.

A small stand-by storage tank has also been provided to permit treatment of the sewage while the main tank is being refilled.

A key aspect of the 'Group of Seven's' work has been to carefully establish any variations in the technique necessary to handle different sewage condi-

tions. For this purpose, a mobile research laboratory has been located on the site. Data derived from studies of the Newmarket operation will be generally applicable to later installations.

Samples collected from points along the Holland River, into which the plant discharges, are also being analyzed to enable OWRC to assess, in the future, the effect of the nutrient removal process on the water quality of the river.



MIKE MANSFIELD of OWRC's division of construction checks meter pumps, located in 'bunker house', which regulate amount of lime added to sewage.

Excessive Phosphorus Promotes Algal Development

The problem posed by nutrient pollution is the development of excessive algal conditions.

Excessive algae present many threats. Respiratory processes of algal masses drain dissolved oxygen from the water, causing oxygen deficiency.

Desirable species of fish are eliminated from a low oxygen area to be replaced by coarse, more tolerant species still able to survive. Ultimately, algal masses can drain large areas of water entirely of their dissolved oxygen supplies. While a body of water remains

in this condition it is, for all practical purposes, dead.

RESTRICT USES

Algal growths also discourage the use of water for swimming, restrict the use of recreational areas such as beaches, degrade shoreline properties and spoil esthetic values. They

cause taste and odour problems in domestic water supplies and clog filters at water treatment intakes.

CRITICAL NUTRIENTS

Phosphorus is one of the nutrients essential for algal survival and reproduction. Fortunately, the technology for the control of phosphorus discharges from sewage treatment plants is presently well developed. Highly successful results achieved by OWRC in its nutrient removal experimentation will provide a technical base for control of phosphorus discharges from Ontario municipalities.

I.J.C. REPORT

The necessity for reducing

the amount of phosphorus entering the lower Great Lakes system to the lowest practical level has been stressed by the International Joint Commission. Municipal sewage represents, by far, the greatest contributor of phosphorus. Approximately 2/3 of the phosphorus entering Lake Erie is from municipal sources.

As well as conducting research into methods for curbing phosphorus discharge, both in the laboratory and at sewage treatment plants, OWRC has assessed the effects of phosphorus loadings on various lakes and water systems throughout the province.

Dofasco Awards Plant Contract

Dominion Foundries and Steel, Limited (Dofasco) of Hamilton announced in February that a contract has been awarded for the construction of a \$3,000,000 hot mill water purification plant. The new plant will be a part of Dofasco's \$11,000,000 environmental control complex.

Construction of the plant is scheduled to begin in spring of this year.

The installation will use a deep bed filtration system for removing impurities from the

hot mill waste waters. This system is expected to exceed purification standards set by the Ontario Water Resources Commission. The plant's capacity—23,000 gallons per minute—is capable of handling present hot mill effluents and has a built-in capacity to meet the expansion of hot mill facilities. The materials used in the filter beds include sand, anthracite and gravel. Approximately one half of the water treated by the plant will be recycled back to the hot mill

for further use. The project is scheduled for completion in December of this year.

The process of water purification using deep bed filters was developed in the United States and is being used in several North American steel mills. The filters to be installed in the plant will be the largest of their type in Canada.

The major contract for the new installation was awarded to Aquatechnics, a division of Westinghouse Electrical.



Award Winning Editorial

Winner of the 1970 award for the best Ontario weekly newspaper editorial on the subject of water resources was the *Tilbury Times*. This is the fourth year that the award has been presented by OWRC. Entries are judged by the awards committee of the Ontario Weekly Newspaper Association. This year's winning editorial, written by H. D. McConnell, publisher of the *Times*, succinctly underlines the individual responsibility for pollution control. The complete text as it appeared in the April 23 edition of the *Times* is as follows:

Pollution Fight Is Everybody's Battle

Last Thursday evening some 600 persons filed out of a hall in Chatham and left behind floors and tables littered with coffee cups, soft drink containers, candy wrappers, cigarette butts and scraps of paper.

The meeting had been called to discuss the problems of pollution and in particular the mercury situation in our nearby waters and the resulting fishing restrictions. There were face to face confrontations.

On the one hand were those of the fishing industry in Lake St. Clair who have been deprived of their livelihood, those associated with the industry who are faced with the loss of income, sport fishermen who are deprived of recreation, and others interested in the problem.

On the other hand there were officials of Dow Chemical, of Sarnia, deemed the villain in the piece, members of the federal and provincial governments, who, having enforced the bans and restrictions, were being blamed for procrastination in doing so, and members of the Ontario Water Resources Commission which was being accused of laxity.

And present too, was Norvald Fimreite whose study on mercury pollution pinpointed both the problem and its cause, and Dr. William Hosworth his mentor at the University of Western Ontario.

There were differences of opinion even among experts pointing out that in girding for battle against another phase in the war against pollution that many of the answers have not as yet been discovered.

And many of the questions posed by the audience were of the "when did you stop beating your wife," variety.

Municipal Affairs Minister W. Darcy McKeough was asked if his government would immediately ban any products that were found harmful to persons, animals or environment.

In his answer Mr. McKeough pointed out that many experts argue that automobiles are the greatest agents of pollution today and he asked how many

people at the meeting would be willing to leave their cars in the parking lot and walk home.

References were also made to the dangers of smoking, yet there seemed to be no evidence at the meeting of any pronounced cut-back in this regard.

And Norman Haines, of Chatham, the moderator of the meeting, in a final summation pointed out that the battle against pollution was also a personal and individual thing.

He recalled that a Chatham newspaperman earlier this winter had endeavoured to organize a work force to clean up the debris on the ice of Mitchell's Bay, left by the thousands of ice fishermen. Much publicity was given the event and the dozen or so people who did turn out collected tons of refuse left behind by those who considered themselves sportsmen and conservationists.

It has been said that within short years, life will cease to exist if the battle against pollution is not won. And yet the general opinion is that it is a matter alone for big industry.

A suggestion was made to us that industries should, instead of declaring profit dividends, take a large percentage of those profits for an all-out battle against pollution.

The thought arises, however, would the shareholders of these large corporations, many of whom are just ordinary people, agree to having their small dividends halved, perhaps. On the other hand would people who are not shareholders in industries donate a day's wages a week, or a month, or a year, to combat pollution.

The battle against the far reaching effects of pollution must also become an individual and personal thing.

And, "last Thursday evening some 600 people filed out of a hall in Chatham and left behind floors and tables littered with coffee cups, soft drink containers, candy wrappers, cigarette boxes, cigarette butts and scraps of paper."



DISCHARGE OF PHOSPHORUS in excessive quantities can stimulate development of adverse algal conditions which represent a major threat to Ontario waterways.



Above: Samples from OWRC monitoring operations are directed to busy general water laboratory for basic analysis. Left: Ruth Higginson of biology branch prepares microscope slides of algae from water samples.

Diversified Activity At Lab

To the uninitiated, laboratories can be very confusing places. This applies doubly for water management laboratories where analyzing for the various types of pollutants and experimenting to investigate various aspects of pollution and water supply problems has become a complex business indeed.

The OWRC laboratory, located near the 401 and Islington, in Toronto, sometimes gives the impression of a bizarre world of twisted glassware and ultra-modern equipment. Fish, locked in little glass cages seem to be particularly prevalent and, in some sections, bubbling tubes—presumably containing essence of toad-wart—seem to dominate.

However, despite the laboratory's resemblance to a movie set, any of the scientists, chemical engineers or technologists will assure the layman that all apparatus is for a specific function or experiment.

The accompanying photos show some of the day-to-day activities and functions of the laboratory.



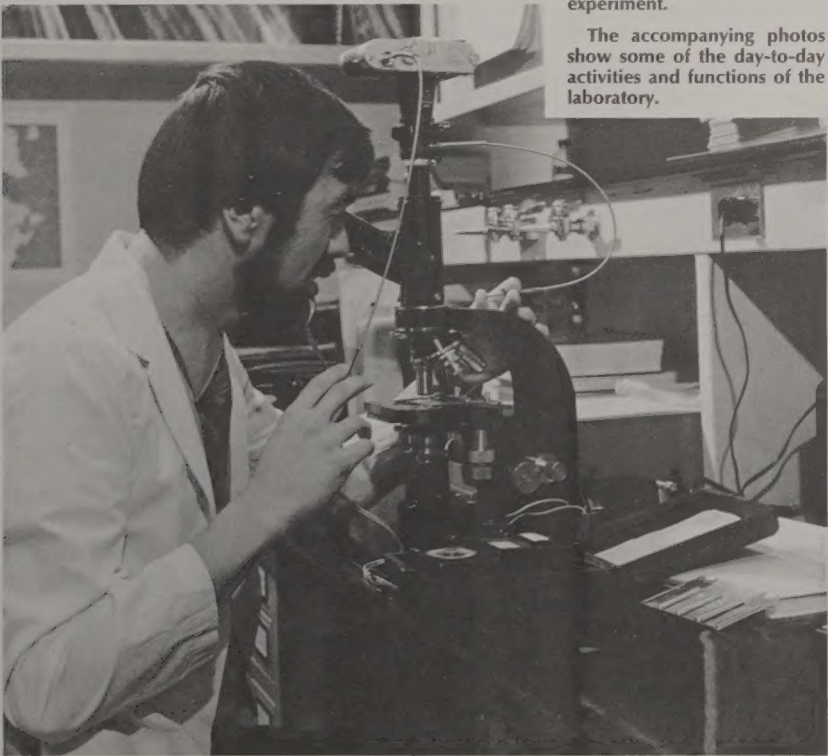
Above: Charmaine Debrechini carefully identifies algae with aid of microscope and reference book. Below: Gord Hopkins photographs a particularly relevant slide.



In study assessing factors related to the uptake of mercury by fish, Charles Rumsey checks dissolved oxygen in water.



Below: In busy section investigating mercury contamination, technicians prepare fish samples for gas chromatography analysis, shown above. The technique determines the amount of methyl mercury in the samples.



Photos/Michael Wallace



1970: Accelerated Activity In Water Management

In the future, 1970 will very likely stand as one of the pivotal years in the evolution of water management in Ontario. Many new plans for more effectively dealing with the province's water

cific guidelines and criteria for the management of water quality in all areas of the province. Under the new OWRC program, application of the criteria to water uses throughout the

to protect and wherever practicable upgrade water quality in the face of population and industrial growth, urbanization and technological change. A key segment of the guideline notes that responsibility for demonstrating that a waste effluent is not having an adverse affect on water uses will rest with those causing the discharge.

FINANCIAL PROGRAM

1970 also saw the general application of a new financial program, evolved late in 1969, to provide further provincial financial assistance, where necessary, to municipalities requiring sewage or water works.

On the whole, development of sewage and water projects has proceeded steadily in Ontario. From its beginning the Commission has had the authority to provide favorable financing as well as the supervision of construction of both water and sewage treatment plants. In recent years, legislation has made it possible for OWRC to build water and sewage works utilizing provincial funds. Under this arrangement, the Commission owns and operates the plant and extensions on behalf of the municipality. Provincial funds required for the construction and operation of such works are recovered over a period of time from the water and sewage rates that the municipality pays for the use of the system.

However, though consid-



VASTLY INCREASED ATTENTION was devoted to pollution of recreational lakes. Above, technologist collects sample taken through ice.



A DRAMATIC ASPECT OF 1970 was the stepped up investigation by OWRC of factors affecting water quality and assimilation of wastes in Great Lakes. Here divers, working with Commission survey crew, prepare to inspect submersible current meter on icy winter day.

supply and pollution control problems were implemented.

Probably the most significant development in the year was the introduction of a program establishing spe-

province will establish standards, which, in turn, will determine the degree of treatment required for the control of water pollution. The guidelines stipulate that treatment must be adequate

erable success was attained utilizing these plants, financial difficulties still arose during the negotiation of some projects. These difficulties were particularly evident in projects involving small communities where a diverse number of factors such as location and characteristics of the terrain often tend to result in high construction costs.

ESTABLISHED BASE

The new financial assistance program filled this gap by establishing a base to ensure that water and sewage servicing costs would not exceed \$100 and \$120 per average home per year for a community respectively. When costs rise above the base, the province will grant financial assistance up to 50% of the gross capital costs.

The plan has proved a great boon to municipalities stymied by problems of finance. During its first year, a total of 71 works or 64% of all water supply projects and 58% of sewage projects qualified for assistance.

Plans were also consolidated during the year for more effectively dealing with spills of oil and hazardous materials and the nutrient enrichment of Ontario waterways—two pollution problems which have generated mounting concern.

COMBAT SPILLS

A contingency plan, incorporating an operation centre at OWRC headquarters was established to provide a framework for the discovery and reporting of spills and to co-ordinate the

resources necessary for their clean-up. The plan recognizes that, though OWRC constantly investigates industrial facilities to ensure that adequate precautionary steps are taken, the possibility of spills from a vessel, industry or a drilling operation continues to persist and that sophisticated measures for minimizing the hazard are necessary.

NUTRIENT DISCHARGE

To curb excessive discharges of nutrients to Ontario waterways, OWRC initiated a program for controlling discharges of phosphorus from municipal sewage treatment plants throughout the province. The first full-scale nutrient removal facilities in the province were installed at the Newmarket-East Gwillimbury water pollution control plant last fall.

Another area which has attracted heightened concern is pollution of our recreational waters. In co-operation with other governmental agencies, OWRC initiated an extensive survey program to seek out and evolve concrete, long range plans to safeguard recreational waters in 1970. Focal point for the initial year of operation was the Kawartha. This year OWRC survey operations will be continued westward through the Trent system.

The water management scene in 1970, then, has been highlighted by innovation. The present year promises to be one of unprecedented activity as programs are further extended and developed to cope with Ontario's water supply and pollution control requirements.



WORK PROGRESSED on the Commission's largest water and sewage project to date—the South Peel system. Photo shows extensions under construction at Lakeview sewage treatment plant.

Nature And Man

A Subtle Invasion

As the industrial-urban society has continued to develop, water pollution has appeared in increasingly insidious forms. No longer can it be considered strictly in terms of bacteriological pollution or floating debris. Even when methods are implemented for coping with the traditional problems, pollution may still persist—perhaps deeply meshed with nature's life cycles.

DDT, mercury, and phosphorus, among others, have provided grave examples of the complex and subtle manner in which contaminants can

upset the environment. Incredibly small quantities of even apparently harmless pollutants can often have repercussions in the eco-system which drastically affect man.

Many of the environmental mishaps have occurred because of society's penchant for convenience. Materials have been used and discarded or injected into the eco-system without comprehensive assessment of possible side-effects.

What has become increasingly obvious is that many side-effects are not convenient. In some cases dam-

age has been done far exceeding the initial convenience. Complex and expensive studies have also been required to attempt restoration of balance to natural systems.

If there is one firm conclusion that can be derived from these mishaps, it is that more comprehensive planning, incorporating environmental safeguards must precede development on the industrial-urban front. It has been proved beyond a reasonable doubt that such planning would save time, money, and effort—as well as the environment.

J. C. F. Macdonald Appointed Director

The appointment of J. C. F. Macdonald as Director of the Ontario Water Resources Commission's division of construction was recently announced by General Manager D. S. Caverly.

Mr. Macdonald joined the division of construction when it was first formed, in 1957, and has been Assistant Director since 1961. The Division supervises construction of water and sewage projects

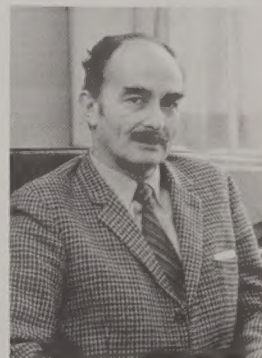
which are provincially owned or financed.

Mr. Macdonald was in the Royal Engineers for four years and has over twenty-five years' experience in the construction of water and sewage facilities. A graduate in civil engineering of the University of London, he has worked on projects in Britain and various points in the Far East.

He is assuming directorship

of the construction division at a time when commission involvement in the planning and construction of facilities is at an all time high.

On announcing the appointment, Mr. Caverly said he anticipated that Mr. Macdonald's years of direct involvement in OWRC projects and broad background in the construction field would prove an invaluable combination.



J. C. F. Macdonald

News Round-up

- June 13-16 has been set as the date for this year's Industrial Waste Conference. The conference, sponsored annually by OWRC, is to be held, once again, at the Sheraton-Brock hotel in Niagara Falls and will include 14 papers. Over 400 delegates attended last year's sessions.

Full details on accommodation and registration can be obtained from: Len Tobias, Secretary of OWRC Conference Committee, 135 St. Clair Ave. W., Toronto, Ont.

- District offices have recently been established by OWRC in Sarnia, Peterborough and Galt. The new offices mark a further step in the Commission's overall policy to de-centralize. The locations will provide greater facilities for routine inspection programs and related surveys associated with sewage and industrial waste disposal and water supply problems as they arise in the respective areas. A district office was previously operational at Sudbury and regional offices are located at Thunder Bay, Kingston, London and Sault Ste. Marie.

Additional district offices contemplated during the coming fiscal year will be in Ottawa and the Niagara area. Eventually the Commission will be operating from five regional offices and 11 district offices as well as the head office and laboratory facilities located in Toronto.

- A tentative program has now been established for a symposium to be held this year at the Sheridan Park, Ontario, Conference Centre. Sponsored by the Sheridan Park Association, the program now being considered includes sessions on long distance transport of gaseous pollutants, a sulphur control process, noise control and bioengineering.

Further details will be published in *Watertalk* when they become available.

- The new U.S. environmental Agency (EPA) recently began operation. The organization is to be the top federal enforcement agency for control of pollution of the environment. Responsibilities of the agency will include setting and enforcing standards in air and water pollution control, solid waste disposal, and regulating the use of pesticides and radioactive materials. Administrator is William D. Ruckelshaus, of Indiana, formerly an assistant attorney general in the Justice Department.

The EPA incorporates the Federal Water Quality Administration and the Bureau of Water Hygiene. It has an initial budget of about \$1.4 billion and will have a staff of about 5,600.

Organization of the EPA is to be along functional lines, with an assistant administrator over each of the agency's principal functions.

New Reference Index Itemizes Publications Available On Water

In addition to the general brochures on water management and educational material available through OWRC's division of public relations, a publication index itemizing reference material on water management has been prepared.

The publication lists titles and publishers of books, special reports, journals, films and filmstrips in a bibliographical format. It is designed as a detailed guide to ma-

terial on water management and itemizes books dealing with specific topics such as thermal pollution, water diversion, and solid wastes management.

It is anticipated the index will be of aid to people interested in pursuing both general and specialized aspects of water management in detail. It should also be of value to libraries planning to incorporate or update sections on the environment.

Resource kits, incorporating educational material on the various facets of Ontario's water management program, have been sent to school libraries throughout the province.

Films on water management formerly handled by the Commission's division of public relations are now available through: Modern Talking Pictures Service, 1943 Leslie St., Don Mills, Ontario (tel. 444-7347).

Second In Series

Map Indicates Probability Of Ground Water

A map designed to serve as a guide to the probable yields of ground water within the County of Kent, in southwestern Ontario, has been produced by the hydrologic data branch of the Ontario Water Resources Commission.

SECOND IN SERIES

The map is the second of a series to be issued by the commission and indicates the range of yields to be expected from wells in the various areas of the county, the depths to the main or most commonly used water-bearing formations, and the chemical quality of water from sampled wells. It was prepared from information contained in OWRC's water-well records and from limited field and laboratory analyses of water samples for quality. Marginal notes are provided to assist the user in evaluating well development prospects.

AVAILABLE AT LIBRARIES

The map was distributed to the municipalities within and

adjacent to the County of Kent, to local agencies dealing with water supplies and licensed water-well contractors and, for reference purposes, to public libraries in the southwestern area of the province. It is also available for examination at OWRC's

libraries in Toronto and at Commission regional offices in London, Kingston, Sault Ste. Marie and Thunder Bay.

The first map, produced in 1970 provides data for the probable yields of ground water in the County of Lambton directly north of Kent.

'Too Much' Air For These Fish

A new twist was given to the old problem of fish kills by the U.S. bureau of commercial fisheries, recently. Researchers with the bureau claimed that fish in the Columbia and Snake Rivers are being killed by too much air in the water.

According to the bureau, air is injected into the water in abnormal quantities as the water plunges down dam after dam along the rivers. The water/air mixture is driven down as far as 100 feet where pressure permits a great deal of air to go into solution.

The researchers say that the supersaturated condition of the water is transferred through the gills of fish to their bloodstreams. If the fish enter shallow water from deep water, thus reducing pressure, excess air comes out of solution and forms bubbles in their circulatory system. This condition is similar to the bends, sometimes experienced by deep divers.

Fish kills are more commonly caused by oxygen depletion of water or by pollutants.